

# PATENT COOPERATION TREATY

## PCT

### INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY


(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

REC'D 18 JUL 2005

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Applicant's or agent's file reference 1441WO		<b>FOR FURTHER ACTION</b>		See Form PCT/IPEA/416
International application No. PCT/BE2004/000045		International filing date (day/month/year) 29.03.2004	Priority date (day/month/year) 27.03.2003	
International Patent Classification (IPC) or national classification and IPC C04B35/66, C04B35/18, F27D1/16, C10B29/06, C21C5/44				
Applicant PREMIER REFRACTORIES (BELGIUM) S.A.				
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 4 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> sent to the applicant and to the International Bureau a total of 1 sheets, as follows:</p> <p><input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>				
<p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the opinion</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input type="checkbox"/> Box No. VIII Certain observations on the international application</p>				
Date of submission of the demand  23.08.2004		Date of completion of this report  15.07.2005		
Name and mailing address of the international preliminary examining authority:  European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016		Authorized Officer  Raming, T  Telephone No. +31 70 340-4232		



# INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.  
PCT/BE2004/000045

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## Box No. I Basis of the report

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1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language , which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
  - ☐ publication of the international application (under Rule 12.4)
  - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements\*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report):*

### Description, Pages

1-4 as originally filed

### Claims, Numbers

1-10 received on 26.10.2004 with letter of 21.10.2004

- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing
3. ☐ The amendments have resulted in the cancellation of:
- ☐ the description, pages
  - ☐ the claims, Nos.
  - ☐ the drawings, sheets/figs
  - ☐ the sequence listing (*specify*):
  - ☐ any table(s) related to sequence listing (*specify*):
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
- ☐ the description, pages
  - ☐ the claims, Nos.
  - ☐ the drawings, sheets/figs
  - ☐ the sequence listing (*specify*):
  - ☐ any table(s) related to sequence listing (*specify*):

\* If item 4 applies, some or all of these sheets may be marked "superseded."

**INTERNATIONAL PRELIMINARY REPORT  
ON PATENTABILITY**

International application No.  
PCT/BE2004/000045

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**Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

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1. Statement

Novelty (N)	Yes: Claims	1-10
	No: Claims	
Inventive step (IS)	Yes: Claims	1-10
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-10
	No: Claims	

2. Citations and explanations (Rule 70.7):

**see separate sheet**

**Re Item V**

**Reasoned statement with regard to novelty, inventive step or industrial applicability;  
citations and explanations supporting such statement**

Reference is made to the following documents:

D1: US-A-5 340 782 (LANGENOHLE MARK C) 23 August 1994 (1994-08-23)

**1. Amendments (Article 34(2) PCT)**

The amendments introduced with the letter of 21-10-2004 seem to be in accordance with the dispositions of article 34(2) b) PCT.

**2. Novelty (Article 33(2) PCT)**

On the basis of the present cited prior art documents there are no objections against novelty (Article 33(2) PCT).

**3. Inventivity (Article 33(3) PCT)**

The major difference between the application and the cited prior art is the amount of clay binder (around 7 wt% bentonite clay in D1, instead of 10-15 wt% clay in the application). The effect of this higher amount of clay is that the mixtures sticks better to a wall when the mixture is gunned onto the wall. Document D1 does not give an incentive to raise the amount of clay binder, since the composition of D1 is used for ramming, in which a lower amount of clay binder is required.

Therefore, on the basis of the presently cited prior art documents there are no objections against an inventive step (Article 33(3) PCT).

## Claims.

1. Gunning refractory composition consisting essentially of 40-90 dry weight % of amorphous silica aggregates, up to 40 dry weight % of alumina based compounds, 10-  
5 15 dry weight % of clay, 0.2-2.0 dry weight % of a chemical binder and further containing 2 to 8 % of water.
2. Gunning refractory composition according to claim 1, **characterized in that** the amorphous silica aggregates comprise vitreous silica.
3. Gunning refractory composition according to claim 1, **characterized in that** the alumina  
10 based compounds comprise kyanite, andalusite, chamote or mullite or a mixture thereof.
4. Gunning refractory composition according to claim 1, **characterized in that** the alumina based compounds content is comprised between 20 and 40 dry weight %.
5. Gunning refractory composition according to claim 1, **characterized in that** the chemical  
15 binder is a mineral chemical binder selected from phosphoric acid, acid alumina phosphate, alumina sulphate or sodium silicate.
6. Gunning refractory composition according to claim 1, **characterized in that** the refractory components have 95 wt. % of grain size lower than 4 mm.
7. Gunning refractory composition according to claim 6, **characterized in that** the refractory components have 100 wt. % of grain size lower than 5.6 mm.
- 20 8. Process for the repair of a hot silica refractory wall comprising the steps of
  - a) conveying a refractory composition consisting essentially of 40-90 dry weight % of amorphous silica aggregates, up to 40 dry weight % of alumina based compounds, 10-15 dry weight % of clay, 0.2-2.0 dry weight % of a chemical binder and further containing 2 to 8 % of water to a gunning nozzle,
  - 25 b) mixing the said refractory composition with water in the gunning nozzle;
  - c) gunning the obtained mixture against the hot refractory wall.
9. Process according to claim 8, **characterized in that** the refractory composition conveyed in step a) is a refractory composition according to any one of claims 2 to 7.
10. Process according to claim 8, **characterized in that** the refractory wall is a coke oven  
30 wall.